The Pyramid of Project and Resource Management [1, 2]

Chris Vandersluis

Introduction

Many years ago I was privileged to visit the Great Pyramids on the Giza plateau near Cairo. I was only 11 or 12 years old at the time so the privilege was somewhat lost on me. But, even then as a pre-teen, the grandeur of the site was striking. Back then visitors like myself and our family were still allowed to enter the Great Pyramid of Cheops and climb a long-angled tunnel to the burial tomb room. The impact on me of being in that room and standing outside the pyramid has been long lasting.

Project management existed when these pyramids were built of course. This was the first and largest of the great pyramids of this site. It was built over a period of 27 or so years and overseen by Hemiunu, a person born into a royal family who was an architect, engineer, and mathematician. If the construction of the pyramids is of interest, I'd recommend the book, Riddle of the Pyramids by Kurt Mendelssohn.

The Pyramids of Giza, incredibly grand are still basically a single project filled with many subprojects all managed from the top. The organization of the work if it was drawn out must have looked very much like a pyramid itself. The Great Pyramid was designed for a single purpose and delivered as a national effort over decades. When we transpose the thinking of how the project management of those pyramids was accomplished into modern day enterprise project management we can see a number of parallels.

Overview

Just like the project of the pyramids, many organizations tend to think of their own management structure, including their own project management structure, in a very pyramid-like fashion. In organizations, we tend to think of executives being a small

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[1] *Editor's note: Second Editions are previously published papers that have continued relevance in today's project management world, or which were originally published in conference proceedings or in a language other than English. Original publication acknowledged; authors retain copyright. This paper was originally presented at the 14th UT Dallas PM Symposium in May 2022. It is republished here with the permission of the author and conference organizers.*

[2] How to cite this paper: Author Vandersluis, C. (2022). The Pyramid of Project and Resource Management; presented at the 14th University of Texas at Dallas Project Management Symposium in Richardson, TX, USA in May 2022; republished in the *PM World Journal*, Vol. XI, Issue X, October.

PM World Journal *(ISSN: 2330-4480)*
Vol. XI, Issue X – October 2022
www.pmworldjournal.com

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number of people at the very top of the pyramid with enormous decision-making power. In the middle, we think of a larger but still modest number of middle-managers who will take the directions from the executives and transform them into actionable requests for people to accomplish. At the bottom of the pyramid we think of the workers who will actually do the work that the middle managers organized for them then report back on its progress. You might argue there are really four levels or five but for the sake of our conversation today, we'll stick with three.
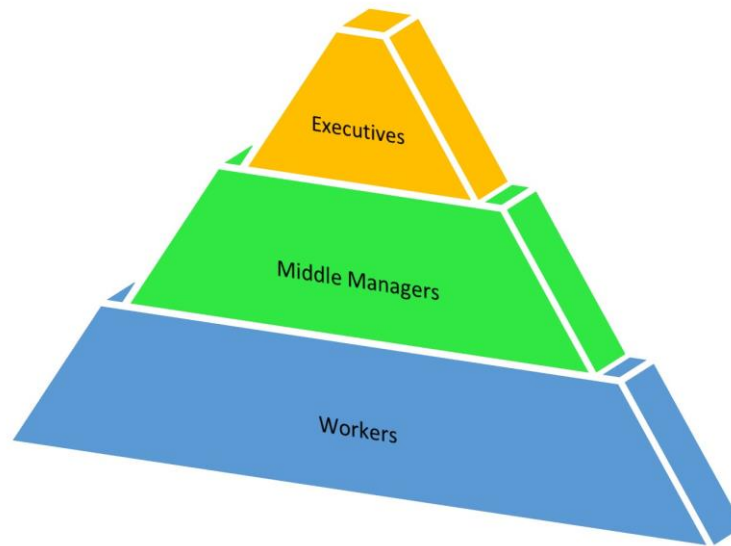
If you're wondering where we project and resource managers are, it's in the middle. In fact, it's often off to the side of the middle with a small, dotted line connecting us in some nebulous way to the pyramid.

Over the years, project management techniques and project and resource management systems have interacted with this hierarchical structure as though it is one homogenous unit; a single pyramid with a single purpose with everyone sharing the same perspectives.

If we think of project management systems that have evolved since the 1980's, this couldn't be more obvious. Original project systems were almost completely focused on scheduling. Operating them required dedicated personnel who would be extensively trained in creating and tracking a project schedule. Resources were added after a few years at a very summary high role or category level. I remember an early PC-based project management system adding resource levelling capability, but it had room for only 8 categories of resources. "Who would ever want more than that?," the publishers said.

These project systems often managed one project at a time or at least distinct projects at a time. The notion of "multi-project" management where sub-projects might be

summarized into a master project came later. The idea of inter-project connections also came later. Now that we could have sub-projects, could we think about sub-projects within sub-projects? Yes. That was next. It doesn't take much imagination to see how this would look very much like a pyramid structure.

With the vision of integrated project management came some thoughts on how that could extend from professional schedulers and planners to different groups. Some extended the model higher in the business structure and we started talking about portfolio management at the very top of the pyramid. Others thought more about applying project management techniques all the way down to the end-user worker and techniques like "Agile" became popular.

Within all this thinking was a single premise: "It's all connected."

Enterprise project systems of the early 2000's tried to take this on with a vengeance. Products like Microsoft Project Server emerged. This sounded great to the publisher as it implied that project management would extend to almost every employee in the organization and every contractor outside of it. But this turned out to be much, much more complicated to deliver. Not the software itself. The software features and functions were comparatively easy. The process was not. Over and over we've seen with enterprise systems that senior management buy in with the idea that they will get more oversight of tasks happening multiple levels below them in their management structure. They imagine they will get to contribute or intervene or guide that work with more of a hands-on approach.

That turns out to be harder than it looks.

But it's easy to demonstrate. Using software tools easily available today we can show how changing the progress of a task at the bottom of the pyramid can ripple up through the entire pyramid to the executive level.

It's like a shiny object for a kitten.

But the impact of delivering that actual functionality is not obvious. Workers at the bottom of the pyramid make decisions and changes to tasks every day, every hour even. Are managers at the middle of the pyramid ready to adjust that fast? What about at the executive level. Why not?

Because not everyone in this pyramid has a homogenous vision of the projects that everyone has embarked on. The perspectives are different; they are distinct in numerous ways.

PM World Journal (ISSN: 2330-4480)
Vol. XI, Issue X – October 2022
www.pmworldjournal.com

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Lately we've had much talk in the industry about how Agile will take over and all project management will be Agile project management. I'm all for Agile. We use it every day in my own company but Agile doesn't seem appropriate for every part of this pyramid. When people ask me why not, I have a couple of simple questions: Who will create next year's budget? Will they use Agile? Who will add the work that becomes the "Backlog." Will they be using Agile? Agile has a place and it's a powerful one which we'll talk about in the pages below.

First, we must look at distinguishing the levels of our organizational pyramid.

Distinguishing multiple perspectives

If we accept that not everyone in the organization has the same perspective on project management, it's worthwhile to distinguish those levels apart. You might argue that there should be more levels and that's perfectly fine but the concept we'll talk about below should apply to however many levels you design for yourself. I'll caution though about having too many levels in such a structure as the more complex a structure becomes, the harder it becomes to design and implement.

Strategic Perspective

Let's start with the Strategic Perspective. These are a small number of executives at the top of the pyramid. The perspective of senior management is the advancement of the organization as a whole. They often report to the board who represent the owners. The project management perspective is often as short as a few months but may be as long as 4 or 5 years. Senior managers will be informed, of course, by the current situation which includes how many resources are available and what projects will be completed by a specific date. That's of interest because senior executives will be looking forward. What is the impact of completing these projects and what will be the requirements on the organization in the months and years to come?

Executives must look at what projects to adopt or deny from the perspective of which will be best for the organization. There may be projects that are a complete disconnect from the skills of the existing workforce. That wouldn't be the kind of project that the existing workforce would be likely to take but it might be best for the organization over the long term. There may be decisions that the senior executive have to make about whether to increase or decrease staff moving forward. There may be more corporate decisions about sub-contracting, merging with another company, purchasing another company, or selling to another company. These are high level decisions that can affect all projects.

PM World *Journal* *(ISSN: 2330-4480)*
Vol. XI, Issue X – October 2022
www.pmworldjournal.com

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Decisions made at the executive level might include "What will our annual budget be for next year?", "What should our total resource capacity be next year?", "What key milestones (like a product delivery) will we drive the business around?", or "What new products and projects are we authorizing to move forward?".

Operational Perspective

At the Operational Level, we find our professional project managers and resource managers. This includes managers who work on project cost management, estimating, scheduling, skill management. The head of a Project Management Office would work from an Operational Perspective. The time frame perspective for the Operational Level would typically be from one week to twelve months. Project Managers here are taking the vision from the executive level and turning it into actionable tasks that will ultimately be turned over to team members.

A typical question here is "How do we do this project?". It is here we see all the standard documents created for project management including the Project Charter, the Project Budget, the Schedule, a Resource Plan, and others. At the Executive Level, there may have been some notion of time frame but it is here at the Operational Level that we see the three sides of the project management triangle turn that vision into a viable plan. What resources will be allocated, what schedule will be adopted, and what scope will be included? At the operational level, it is rare to be concerned with what one individual might have on their plate to complete today or what the strategic goals of the company for next year are.

Decisions made here at the Operational Level include "What resources should be allocated to this project?", "What priority will this project have alongside other projects we are committed to?", "What background operational work such as infrastructure and security needs to be done aside from these projects?" and, "What projects need intervention because they are off schedule or off budget?".

Tactical Perspective

The Tactical Perspective is that of the people actually delivering the work within projects. This includes employees or contractors who have been assigned actual tasks as well as team leads, scrum masters and other team members directly involved in delivering work. The Tactical time perspective is typically from one shift to two weeks long. It is common to hear someone at the Tactical Level say, "Just tell me what you want me to do and I'll get it done." People at the Tactical Level are not interested in the long-term strategic goals of the organization. They aren't interested in resource levelling, portfolio balancing or other operational issues. They are focused on delivering quality work in the coming days.

PM World Journal *(ISSN: 2330-4480)*
Vol. XI, Issue X – October 2022
www.pmworldjournal.com

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The sequence of which task they do first or last is rarely of interest. They expect their workload to be delivered in a package that is individualized and that contains the instructions or constraints they need to know in order to deliver the work.

Decisions at the Tactical Level are few. That's by design and by desire. "What sequence should I do these tasks in?" and "Do I need assistance for this task?" are among the few asks that come from the Tactical Level.

Empowering each level distinctly

We now have in our model a three-level hierarchy. Where organizations have, in the past, gotten stuck is when they try to treat everyone at each level as if they have the identical perspective. If we group all data for these three levels together, an individual at the Tactical Level might make a change that would visibly affect a project's schedule or visibly affect a budget vs. actual profit report for management. That's rarely helpful.

When we look at project reporting at the operational level, we make several assumptions, the first being that the data we're looking at in a report has all been approved by the report's author. At the Tactical Level, this is of no interest to us. Tactical personnel adopt a task. They either complete it or make progress on it and report their progress and effort on a timesheet or job record. Once they've submitted that record, their interest in that task drops to zero.

At the operational level we might look at data from the tactical level in the context of the originally approved budget. There might be back and forth conversation with scrum masters or even the employee involved in how much time was spent on a task if there is a big discrepancy. Was it too little? Was it too much?

In some situations, we see requests from operational personnel back to tactical employees asking them to change their report of how much time was spent on something in order to match the operational expectation. "We have to bill this task to the client and I need your timesheet to say 35 hours," an account manager might say. This makes no sense to those at the tactical level. Our recommendation over the years is to separate this exercise out. Have the tactical personnel simply report on what they did for a task. If the operational personnel don't like the number, let them make auditable changes. It is no accident that government processes such as the US's DCAA (Defense Contract Audit Agency) and the IRS in the context of Research Tax Credits say the same thing. Don't start your timesheet with a pre-supposed result. Start from the raw data.

The reason this is an issue is because operational perspectives are distinct from tactical perspectives.

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So how do we empower each perspective in the organization?

We start by distinguishing them. We start by separating the data, analysis, and reports of one level from the other. Where "integrated" project systems have stuffed data together, we unstuff them and we look at each level distinctly.

Strategic Level

At the Strategic Level there is no tool more popular than Excel. This is not guesswork. Excel or a spreadsheet like it is ideally suited for the perspectives in upper management. Aside from the fact that executives in MBA programs live and breath Excel all the time and Chief Financial Officers appear to be weaned on Excel from birth, spreadsheets are designed to take data in one format and apply it to another. So we find rows of projects and columns of months or rows of resources and columns of weeks or rows of work categories and columns of money.

I have yet to meet a strategic team that wasn't using Excel, or another spreadsheet to analyze and project their data. But this data is rarely from the other levels. It looks like perhaps it might be. What we need from the other levels in a spreadsheet which forecasts our future costs might include project progress to date or projected end dates of resources or even resource usage projections. What is most common to find at the executive level is a spreadsheet where the actuals are fuzzily similar to the operational progress reports and projected schedules.

"Couldn't these be identical?" I've been asked. "In an integrated enterprise project system, I was shown how it could all be tied together and then I'd be managing down to the penny." That demonstration probably wasn't a lie but it also probably didn't include an explanation of how all data then would be driven from the bottom up and the easy, flexible projections in Excel would become much more difficult to create, if not impossible. In some cases we've seen executives so lulled by these presentations that they have abdicated their own analysis, accepting whatever came from an operational view until the point where they realized that their own perspective on the company was completely absent.

What is most effective here is to have management make its own projections and analysis independent of the operational perspective taking perhaps only the summary progress of budget vs. actual from the lower more detailed level.

Another common tool at the very top is a summary barchart. Executives often take comfort in seeing a one-line-per-project schedule pushed forward from a multi-week schedule to a multi-year schedule with committed and proposed projects on the same page but perhaps distinguished in some way. If there is capacity planning at all, it might be done at a total personnel level as opposed to schedules and certainly not at an individual level.

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This report is also likely not driven directly from the operational data though it is likely to be similar to it. Project portfolio priority lists and projections are also visible here but usually in a very high-level report resulting in committed vs. not-committed projects along with approximate costs over time.

Operational Level

At the Operational Level, the tools used by project and resource management professionals will be familiar to all those in the project management industry. It is here we find our project schedule, a resource capacity plan, plan vs. actual, and timesheet actuals rolled up into our task progress.

The Operational Level works on determining what has happened so far, what is expected to happen and how does what has happened so far affect what we expect to happen. Those projections help make decisions on task priorities, adding or removing team capacity and key decisions on adding or cutting scope to fit inside the organization's constraints.

It is common at this level to see barcharts and barcharts with key resource capacity plans. It is common to see progress curves including earned value analysis if that is what the project calls for.

Still within the operational level we are likely to see representations of all projects in one barchart with one line per project as a summary very similar to what the executives are interested in but at this level, we're more likely to see indicators of performance or risk to flag projects that may need intervention. There is nothing a project manager likes less than to be surprised by progress that isn't going as expected so analysis of actual vs. plan is common here.

Tactical Level

At the Tactical Level, we find the most numbers of people. It is, after all, the lowest level of the pyramid and, at the base, is the biggest volume. So too is the case with our workers. But the needs at the Tactical Level are the simplest. "Just tell us what you want us to focus on this week," is a common refrain here. It is at this level that Agile tools and processes have flourished. When we think of a technology type of project, it is common that the sequence of work at the Tactical Level isn't very significant, so the perspective of plucking a task written on a Post-It off a white board seems quite significant. There is some irony here in that back in the 1970s and 1980s as project management software was just getting into the PC market, project "war-rooms" were created just like that with magnetic white boards around the room and activities written on small cards to be stuck

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to the wall. Then, inter-task relationship would be drawn, and the critical path scheduled manually right onto the cards.

With new Agile-type boards, we have come full circle in the display of project work to be accomplished.

There are numerous theories of how the columns should be defined for Agile and it's best left as a separate debate to see what is most effective. At the end of the day, a task, adopted by a person is how the work is moved forward. Then that person works on that task over the coming days until it is completed. The tasks at this level must be small enough to swallow within the time frame of a Tactical session. That typically means one to two weeks long though it can be even shorter for industrial work. In that case, just looking forward to the work that can be accomplished by the end of the shift may be all that can be absorbed.

It's important to note that the number of tasks at this level is almost certainly a much larger number than the tasks that were planned at the operational level. So, some type of summary from this level to the next becomes essential in order for project and resource managers to compare their plans with the actuals and be able to forecast work forward. That being said, there is a translation from a task in the project schedule to a list of things to do for each individual. Going from a 90-day Development task in a schedule to a 3-day programming task means someone has to break down the work to that level. It has to become bite-sized so it can be swallowed.

A tactical report might be done right on the Agile type task board. It might be done in a timesheet. At the end, the only important thing for the team lead to know is, "Are you done with that task or not?"

"Sometimes it's better to look integrated than be integrated"

It's an expression that was shared with me by a business partner a long time ago as we were trying to complete an integrated enterprise project system. There was a desire from the management at our client to create an all-in-one, fully integrated system where every piece of data fit into every other piece of data including project management, reporting, finance, payroll and much more. The problem we had was that the desires of each of those groups was quite different. We realized that we could most easily make things look similar and even look like they were the same but in many cases we'd manage the data distinctly so it would work for the process involved. It was a successful strategy.

The converse however is also true. Sometimes it's better to be integrated than just look integrated. The important thing to know is that there is not a single project management

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architecture that is appropriate to every situation, every organization, and every perspective.

You'll need to decide when it's appropriate for your own environment to be integrated and when it's better to just look integrated.

The upset of change

If what we've been discussing is leading you to think about making changes in your organization for your project management and resource management processes, then it's important to acknowledge that change is likely to cause upset. It almost doesn't matter what the change is related to, and it certainly doesn't matter if the change is towards something much better. Change generates upset. So how can you go about implementing changes in your project management process to mitigate upset and avoid pitfalls? Here are a few suggestions.

The first thing to think about is who is going to generate the change. If that change is coming from the executive level, then it may arrive more as a directive. That can generate resistance to it right away. Resistance to a directive from management can occur even before the directive is read. If the change is coming from the operational level, it's likely arriving with little authority. Project Managers are famous for having lots of responsibility and almost no authority. If change is coming from the tactical level, then it may arrive on deaf ears of those responsible for other perspectives in the organization. This can result in passive resistance where end-user workers nod their heads and then don't actually follow guidance on how to manage projects.

Thinking of where the request for change is going to come from will help you pick strategies to deploy those changes.

First things first, don't try to change everything at once. We've talked about Agile in these pages as a tactical tool but this is a wonderful opportunity to use Agile methodologies to implement level-by-level changes. Start with one item or two items to change, implement those and see where that makes a difference. Working in this kind of gradual, phased approach may never result in the complete vision you had but it is highly likely to result in positive changes that are adopted and deployed.

Next, see who in the organization is already on board. People at the tactical level who are committed to Agile who find you're also committed to tactical personnel working in an Agile mode will become early allies. Where you can get into trouble is when someone feels so successful at their level that they believe that everyone from the CEO to the

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lowliest employee needs to do things the same way they do. Small steps can be your path. That will make it easier to head off grand enterprise-wide adoption nightmares.

I've always been a fan of the Buckminster Fuller Trim-Tab method of finding tiny changes in a key element of a process and then having those changes slowly change the direction of the processes of the entire organization. You can read more about my thoughts on Bucky Fuller on my EPMGuidance.com site.

Conclusion

We've covered a lot in this short overview, and you may find that the whole concept of having project management and resource management being managed distinctly at each level of the organization disorienting. That's natural. If this article has brought more questions than answers, that's by design. Here's what I hope you'll think about. In your own organization, how does the perspective of the project management audience affect what they experience? If their perspective has underlying differences from another level of the organization then the idea of integrating all data, analysis, and methodologies for project and resource management should be challenged.

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www.pmworldjournal.com

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